

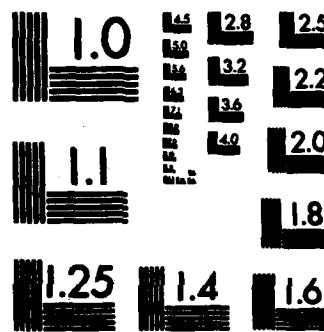
FD-A132 541 NDP5014 CRYSTAL USED FOR MINIATURE RANGEFINDER(U)
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OH
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News Brief

NdP₅O₁₄ CRYSTAL USED FOR MINIATURE RANGEFINDER

**Shandong Sheng Laser Laboratory Information Office and
Shandong University Crystal Materials Research Institute**

An NdP₅O₁₄ crystal is a laser crystal with a low threshold value and high efficiency. However limited, many people have proposed the idea of putting it into use, but due to the difficulty of growing the crystals the device is still in the testing stage. Shandong University has already grown a 70mm long NdP₅O₁₄ crystal weighing 60 pounds which has fairly good optical qualities. In cooperation with the Shandong Sheng Laser Research Laboratory, a miniature, xenon lamp pumped, Q-tunable dye laser has been developed. The laser weighs 23 grams, measures 50 X 25 X 15 mm, its discharge capacity is 20μF, dynamic threshold value is 3J, pulse width <10ns, output already achieved is in megawatt range, and delay time is 40~80μs. Field testing of the rangefinding capability of this laser was done on a GJ-2 type military rangefinder with the Shandong Sheng Laser Laboratory doing the evaluation. At present, the measurement range is 60~3000m, accuracy is 2.5m, and ranging probability is 96%. A prototype was shown at the Education Ministry's Exhibition of Scientific and Technical Achievements. With regard to the present prototype, it still has great potential in such areas as overall equipment weight, bulk, and measurement range.

Submitted 7 June 1982

THE FIRST NATIONAL COLOR CENTER LASER SYMPOSIUM IS CONVENED AT
OVERSEAS CHINESE UNIVERSITY

(by Ji Zhong)

The Chinese Institute of Optics convened the Color Center Laser Symposium at Fujian's Overseas Chinese University from 5~11 June, 1982. Attending this year's symposium were 67 representatives of 32 organizations from throughout the country. Eight general reports and 27 scientific papers were presented at this symposium. The general reports provided a fairly detailed description of color center physics, development trends in research into color center laser crystal growth, and color center applications in chemistry, optical frequency measurement as well as in laser frequency marking. The contents of the scientific papers are divided into three parts:

(1) Color center physical and chemical properties. The principal reports were: "Research on physical properties of crystals with sodium adulterated LiF color centers (Chinese Academy of Sciences Geological Research Laboratory); "Research on the stability of F_2^+ centers in LiF: O^{2-} crystals" (Tianjin University); "The effect of radiation on color center formation and photothermal stability in KCl adulterated crystals" (Overseas Chinese University); "The formation and decay of color centers in LiF crystals" (Shanghai Jiaotong University); "Thermal analysis of certain alkali salt type binary systems" (Overseas Chinese University).

(2) Color center materials. The principal reports were: "Using the gradient method to grow LiF crystals" (Tianjin University); "Growth of LiF:Ni $^{2+}$ crystals" (Optical Instrument Research Laboratory); "Development of KCl adulterated crystals" (Overseas Chinese University); "NaF monocrystal growth" (Beijing Synthetic Crystal Laboratory); "Introduction to color center crystal KCl:Na growth" (Beijing Synthetic Crystal Laboratory);

(3) Color center laser devices. The principal reports were: "Properties and uses of LiF color center lasers" (North China Opto-Electrical Laboratory); "F₂ center laser properties in LiF crystals" (Shanghai Jiaotong University); "LiF crystal F₂ and F₂ $^+$ center lasers" (Shanghai Optical Instruments Laboratory); "F₂ $^-$ fluorescent spectrum

and stimulated emissions in LiF crystals" (Anhui Optical Instruments Laboratory).

In addition to scientific and technical reports, the conference also had a lively discussion on the outlook for advancements in color center lasers and how research work will be carried out in the future. In light of the problem of rather poor stability and short service life of existing color center lasers, the attendees are hoping that the organization will improve the performance of the lasers and will strive to develop within a short time a color center laser which will have actual use value. At the same time, they propose using potassium chloride adulterated with lithium as the main object of research. Color center laser research involves technology in the several areas of crystal growth, materials radiation treatment and performance testing, as well as laser equipment. Also, the attendees feel that it is very important to utilize the special skills and equipment of the various organizations and that joint development research is most essential.

The conference proposed that the Color Center Laser Symposium be convened every two years. The second symposium will be held in 1984.

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